ATTACHMENT A:

SUMMARY OF TECHNOLOGY CONSULTING FIRM RECOMMENDATIONS

The District's technology plan was provided in full as Attachment E to the District's original appeal to the FCC, dated October 29, 2014. This summary of the plan supplements that attachment, and it is provided for the panel's convenience.

HUCKABEE RECOMMENDATIONS – 2010 Technology Assessment December 14, 2010

DATA SWITCH REPLACEMENT

- Currently the District has a need to replace aging data switches with more capable equipment. As the District's network has evolved, as well as major upgrades to data center, server, storage and processing equipment, many of the LAN switches require replacement to facilitate the increased network traffic.

WIRELESS DEPLOYMENT

- Use of wireless access points has been based on need. The result is wireless access points spread throughout the facility resulting in limited bandwidth support or with gaps in the coverage of the facility.
- Increased the wireless data delivery capability includes POE switch ports, access points, cabling to access points as well as central processing and managing equipment and software.

CLASSROOM VOICE SERVICES

- District lacks voice service in the classroom. Implementation of VoIP phone network includes POE switch ports, access points, cabling to access points as well as central processing and managing equipment and software.

WIDE AREA NETWORK

- The District Wide Area Network services are provided by leasing bandwidth from AT&T. Installing a District-owned WAN would eliminate the monthly lease costs as well as providing bandwidth capabilities which can be scaled to meet the District's current and future needs.

EST GROUP – TECHNOLOGY ASSESSMENT 2010

Recommendations included:

2.1.1. – Core Infrastructure – Campus Level

- **Finding:** A large percentage (63%) of campus level network equipment is end of life and/or outside of the MISD enterprise level standard, thus creating a huge disparity in the level of technologies at specific campuses.
- **Recommendation:** The network infrastructure (cabling, power, routing, switching) must be addressed immediately at any school that doesn't meet the minimum MISD standards for a campus. Immediately replace End of Life and non-standard equipment

through a centralized and standards based procurement process [*emphasis added*] so the new equipment can be properly sized, configured, managed and supported.

2.1.2 – Network Refresh Cycles

- **Finding:** The refresh Cycles for Network Equipment, Desktops, and Servers is dangerously long (6+ years in practice). Equipment outside of the 4-5 year window is out of warranty, expensive, or impossible to repair, and cannot efficiently run modern applications and technologies.
- **Recommendation: Immediately implement a refresh cycle for all Network Equipment** *[emphasis added],* Desktops, and Servers of 3-5 years.

2.1.3-Datacenter

- **Finding**: MISD's current Datacenter is not configured or equipped to provide economical or practical support or security for a large enterprise.
- **Recommendation**: Immediately retrofit and modernize the MISD Datacenter with proper power and cooling management, data security and protection, high availability and disaster recovery considerations.

2.2.2 – Network Coverage – Wireless Access

- **Finding:** Although significant investment has been made over the past 2 years to build the foundation, MISD currently has very little wireless network coverage on the whole, **district-wide** [emphasis added].
- **Recommendation:** At the district level, work to increase wireless coverage throughout the district [emphasis added] by adding enterprise class wireless devices to the existing wireless infrastructure.

Importantly, the District did not have any campuses with complete wireless access. Only 15 sites had limited wireless access. The remaining 23 sites had no wireless access.

2.2.2.1. Current District-Wide Wireless Coverage

Campus	No Wireless Access	Limited Wireless Access	Complete Wireless Access
Elementary Schools			
Anderson		X	
Boren		X	
Brockett	X		
Brown		X	
Cabaniss		X	
Daulton	X		
Davis	X		

Section 8.1

19. District Wide *[emphasis added]*

- Reconfigure Layer 2/3 network to provide logical management of traffic and rapid and reliable delivery of services such as video, VoIP, educational applications, and multicast imaging
- Ensure district network is prepared for server virtualization/clustering
- Replace/phase out equipment that is nearing or has already reached end-of-warranty status
- Configure resources so that the entire network can be monitored, including UPS devices, servers, application performance, bandwidth usage, and traffic patterns
- Ensure that each location is able to handle projected growth and that each new site is configured and constructed according to predefined standards - i.e. computer labs, network closets
- Re-cable each site so that the proper length of Ethernet cable is utilized and properly managed to mitigate problems such as dust, heat, and the stress put on equipment by excess cable